



## NEWS CLIPS

**February 16-22, 2019**

### Highlights of the Week@IITD

#### **Soon, a ‘wheelchair’ map of Delhi streets**

**February 22, 2019** <https://indianexpress.com/article/cities/delhi/soon-a-wheelchair-map-of-delhi-streets-5595527/>

Under the project, maps are being designed using low-cost sensors that can “identify features of the sidewalk and gauge how wheelchair- or tricycle-users propel themselves

The University College London (UCL), in collaboration with the Indian Institute of Technology, Delhi, is in the process of developing wheelchair-accessible maps of Delhi with the help of low-cost sensors.

Under the project called ‘Street Rehab’, maps are being created to “gain a clear understanding of user needs, available technology and the accessibility of the city”.

“Infrastructure in India can often make pushing a wheelchair or tricycle difficult. We’re identifying how people are currently getting around in Delhi, to find new ways of facilitating rehabilitation and identifying ways to improve infrastructure,” said Catherine Holloway, Academic Director of the Global Disability Innovation (GDI) Hub.

“For the first stage of the ‘Street Rehab’ project, the researchers teamed up with local NGOs to find wheelchair and tricycle users from across the socio-economic spectrum, who were the study participants and also advised on the development of the project,” UCL said in a statement.

#### **IIT Delhi and University College London collaborate to create wheelchair-accessible maps of Delhi**

**February 21, 2019** <http://www.newindianexpress.com/world/2019/feb/21/iit-delhi-and-university-college-london-collaborate-to-create-wheelchair-accessible-maps-of-delhi-1941894.html>

The Street Rehab project team is trying to identify how people are currently getting around in Delhi, to find new ways of facilitating rehabilitation and identifying ways to improve infrastructure.



A collaborative project between the Indian Institute of Technology Delhi and University College London (UCL) is developing wheelchair-accessible maps of Delhi using innovative sensing platforms.

The Street Rehab project has been designed to gain a clear understanding of user needs, available technology and the accessibility of India's capital, UCL researchers said on Wednesday. "Infrastructure in India can often make pushing a wheelchair or tricycle difficult.

We are trying to identify how people are currently getting around in Delhi, to find new ways of facilitating rehabilitation and identifying ways to improve infrastructure," said Dr Catherine Holloway of the UCL's Interaction Centre and Academic Director of the Global Disability Innovation Hub.

The UCL team has developed low-cost sensors that can identify features of the sidewalk and gauge how the wheelchair or tricycle users propel themselves. The sensors are linked to the user's mobile phone, to make their mobility device part of the Internet of Things (IoT), and to enable users to access the sensor data via an app. They can also add a geo-tagged photo or voice notes to annotate their journey.

For the first stage of the Street Rehab project, the researchers teamed up with local NGOs in India to find wheelchair and tricycle users from across the socio-economic spectrum, who were the study participants and also advised on the development of the project. Anonymous data from the participants' sensors has helped create a map of accessibility in parts of Delhi.

The research team, led by Holloway alongside partners in the UK and India, is now continuing the project to develop a larger database of the wheelchair accessibility of Delhi to identify what needs to be improved and to deliver a service to wheelchair users to aid in their rehabilitation. "Development of assistive technologies for the empowerment of people with disabilities is extremely important. To achieve social and economic inclusion through research and innovation, UCL and IIT-Delhi will have joint activities in design, development and dissemination of assistive technology which sits between economic burden and economic prosperity," said Professor PV Madhusudhan Rao of IIT-Delhi.

The Global Disability Innovation (GDI) Hub seeks to accelerate disability innovation across the globe through co-design, collaboration and innovation, bringing together the world's best academics, disability experts and designers to improve the lives of the world's one billion disabled people.

It was launched by London Mayor Sadiq Khan in September 2016, stemming from the legacy of the London 2012 Paralympic Games, led by founding partners UCL, Queen Elizabeth Olympic Park,

Loughborough University London, University of the Arts London, Victoria & Albert Museum, Sadler's Wells, Helen Hamlyn Centre for Design, and Leonard Cheshire.

The Street Rehab project is associated with a 10-million pound GDI Hub project funded by the UK's Department for International Development (DFID), called AT2030, that aims to bring life-changing assistive technology, such as wheelchairs and eyeglasses, to all.

The GDI Hub's AT2030 project team is in discussions with colleagues in Delhi to explore opportunities for an innovation hub in India and will be expanding into Nairobi, Kenya, this year.

AT2030 seeks to reach at least three million people, develop new technologies and service delivery models, spark dozens of start-ups and opportunities for investment and innovation to help people living with disabilities.

## **2 state boys win national science contest**

**February 20, 2019** <https://www.tribuneindia.com/news/himachal/2-state-boys-win-national-science-contest/731807.html>

Kartik Dhiman of Government Senior Secondary school, Ghalian (Kangra), and Vinayak Rana of Kutlehar Public School, Belh (Una), have won the national science competition and "Innovation in Science Pursuit for Inspired Research (INSPIRE) Award-MANAK". The event was organised by the Department of Science and Technology, Government of India, at IIT-Delhi on February 14 and 15. As per information, 850 students across the country and 31 from Himachal participated in the competition. Sixty participants were declared winners. These national winners will get the chance to go on an educational tour in Japan with their selected models.

## **State students shine at Inspire-Manak Awards**

**February 17, 2019** <https://www.dailypioneer.com/2019/state-editions/state-students-shine-at-inspire-manak-awards.html>

Three exclusive models conceived by the meritorious students of the State received the coveted INSPIRE – MANAK award at IIT-Delhi. The national level contest, which brings out some of the best talents from across the nation showcasing the scientific temperament of the school students had as many as 60 top selected models from different States across the country.

Notably, in terms of percentage, Jharkhand emerged as the top State clinching maximum awards. The innovative models created taking inspiration from the surrounding problems have been envisaged by the aspiring young talents -- Ankita Singh, Kiran Kumari and Hemant Kumar Paswan.

The models presented at the national level contest ranged from pollution controller machine to the concept of smart bridge including multipurpose chulha. Sharing the experience, Ankita who hails from Dhanbad said, "The multipurpose chulha that I made does three tasks which include boiling water, distilled water processing including waste materials process. The concept has been taken up from the villages where often such problem arises."

Other students -- Kiran Kumari from Lohardaga and Hemant Kumar Paswan from Ramgarh, who brought laurels to the State, shared the details of their respective models.

“The idea of the ‘Smart Bridge’ is to safeguard an individual life during high tide. The bridge constructed on the river banks are at high risk during the flood. The concept works on the model of light and sensor detection techniques. During high tides, the gate constructed on the bridges gets automatically shut-down restricting all public movements,” said Kumari.

Similarly, Paswan who designed the coal air pollution controller said that the replica works on the theory of power plant emissions that result from the combustion of fossil fuels such as coal, gas and other hazardous materials.

Over 31 students enrolled in different government schools participated in Inspire Award Scheme – the seventh edition of the national level exhibition cum project competition. The event was organised on February 14 and 15. The students from Ramgarh, Latehar, Gumla, Lohardaga, Hazaribagh, Ranchi, East Singhbhum, Koderma, Khunti, Dhanbad, Deoghar and Pakur were selected for the annual affair.

This season, around 208 unique models selected from different districts of Jharkhand were displayed illustrating the creativity of the students at the concluding State-level ceremony of Inspire Award – Manak. Approximately, 21 creative models having unique components were selected for the national level competition from the State.

“Jharkhand students have shown their mettle in the competition. In comparison to a few big States like Andhra Pradesh and Bihar, the students of Jharkhand have performed extremely well. Bihar received only one award while Andhra Pradesh got two awards,” said Regional Deputy Director of Education, South Chotanagpur Division cum State Nodal Officer (Inspire Award) – Ashok Kumar Sharma.

Interestingly, the selected models at the national level competition are patented. The competition is organised annually by Ministry of Science and Technology, GoI to encourage talented young students to study Science and pursue career in Research and Development (R&D).

## **IIT Delhi looking to hire 100 foreign teachers**

**February 16, 2019** <https://www.thehindu.com/education/colleges/iit-delhi-looking-to-hire-100-foreign-teachers/article26291840.ece>



A view of Indian Institute of Technology Delhi (IIT).

Indian Institute of Technology (IIT) Delhi has about 300 (30%) faculty positions lying vacant and this has been the case for the last 10 years. The shortage has continued to dog the premier institute despite all attempts to hire competent people. Recruitment interviews at all levels — assistant professor to full professor — take place every six months.

“Our bar for faculty recruitment is high. So we are not able to find suitable candidates. We would rather leave the positions vacant than fill them with sub-standard faculty,” says Prof. V. Ramgopal Rao, Director of IIT Delhi.

But things are beginning to change thanks to being recognised as an Institute of Eminence. As an Institute of Eminence, IIT Delhi can now recruit foreign nationals for faculty positions with greater ease. Five foreign nationals have already been recruited as faculty on contract for five years, extendable based on performance.

“We have 300 faculty positions lying vacant and we intend filling one-third (100) of them by hiring foreign nationals. This does not include people of Indian origin,” says Prof. Rao.

While finding well qualified people in India for positions in basic sciences — physics, chemistry and biology — has been easy, the same cannot be said for other disciplines. Hiring qualified faculty in the case of mathematics is a “bit difficult,” according to him.

Like in basic sciences, IIT Delhi has not been facing problems finding talent in core engineering disciplines. “But we find it very difficult to find well qualified people in computer science, artificial intelligence, machine learning, and data sciences. Wherever job opportunities are plenty, where there is industry demand we find it difficult to get good people,” he says.

Not many go on to a PhD because of the high demand. “We are competing with multinational companies such as Google, Microsoft, which hire people at five times the salary that IIT Delhi pays,” he says.

Since foreign nationals are hired on a five-year contract, will the Department of Science and Technology (DST) approve project proposals and fund them? “Nobody [foreign national working as faculty] has approached us so far. It should be possible to fund them. We can certainly take a call on this,” says DST Secretary Prof. Ashutosh Sharma.

Unfortunately, even after becoming an Institute of Eminence, IIT Delhi cannot hire foreign faculty at a higher salary. This is unlike in the case of countries like Singapore which hires foreign faculty by paying competitive salary. “We can pay only the same salary [as we pay for Indians]. There is no provision to pay different [higher] salary. Some top ups is possible but this does not come from MHRD [Ministry of Human Resources],” Prof. Rao says.

Besides the difficulty in finding well qualified people from India, one of the main reasons IIT Delhi is actively looking to hire foreign nationals is to improve its position in the world university ranking. “International ranking takes into account the number of foreign students, foreign faculty and faculty student ratio. On all these three counts IIT Delhi has been scoring a zero,” says Prof. Rao.

**February 22**

## **Robots may soon clean Delhi sewers**

<http://www.newindianexpress.com/cities/delhi/2019/feb/22/robots-may-soon-clean-delhi-sewers-1942021.html>

***In an attempt to eradicate manual scavenging in the city, the Delhi government is seeking robotic solutions to clean sewers and septic tanks.***



Delhi Minister for Social Welfare, Rajendra Pal Gautam, in a meeting with representatives of technological

In an attempt to eradicate manual scavenging in the city, the Delhi government is seeking robotic solutions to clean sewers and septic tanks. The government has acknowledged that there is a need for robotic solutions for smaller lanes where large machines cannot go. The feasibility of a robotic solution was discussed in a meeting on Thursday between Delhi Minister for Social Welfare, Rajendra Pal Gautam, experts from IIT, Delhi Technological University, and Netaji Subhas Institute of Technology, and representatives from the Delhi Urban Shelter Improvement Board, Northern Railways, municipal corporations, and Delhi Jal Board.

“It is evident that the Delhi government has already taken up various efforts to stop the inhuman practice of manual scavenging, and would soon introduce a fully mechanised system to clean the sewage system and septic tanks. Still, there is a need for robotic solutions for smaller lanes and by-lanes where machines cannot go,” said a statement by the government.

The Aam Aadmi Party (AAP) dispensation is taking its cue from Kerala, where a robot named Bandicoot has been developed by Genrobotics, Thiruvananthapuram. Representatives of Genrobotics also met the minister and made a presentation.

Bandicoot, a semi-automatic robot developed by start-up Genrobotics only requires a human operator to stand on the street near the manhole. The machine, with its many cameras, a robotic arm with 360-degree mobility, and a handy bucket to collect the waste, does the rest. The operator

is only needed for navigation when the manhole is of non-standard size or there are multiple sewer lines below.

Bandicoot has been commissioned by municipal bodies in Kerala, Tamil Nadu and Andhra Pradesh, where 80 manual scavengers have been trained to operate the robot in a bid to offset their loss of livelihood, the statement said. The experts from IIT opined that since the robot was not constructed for condition in Delhi, the DJB could approach the company for demonstration and studying the feasibility of using such a machine in Delhi.

#### **Sensors can detect toxic gases**

The Aam Aadmi Party government in Delhi is looking at using robots to clean sewers and septic tanks, in order to end the practise of manual scavenging in the national capital. Experts from Netaji Subhas Institute of Technology have suggested that the feasibility of using sensors in manholes could also be examined. These sensors are required to be placed in the sewer or septic tank so that the status of toxic gases in the manhole may be recorded prior to opening the manhole.

### **IIT Gandhinagar Launches Patel Center to be Indian Hub for Sustainable Development**

[https://www.indiawest.com/news/business/iit-gandhinagar-launches-patel-center-to-be-indian-hub-for/article\\_29001d7c-354a-11e9-89e6-73b302e0b443.html](https://www.indiawest.com/news/business/iit-gandhinagar-launches-patel-center-to-be-indian-hub-for/article_29001d7c-354a-11e9-89e6-73b302e0b443.html)



The Indian Institute of Technology in Gandhinagar announced it has launched the Dr. Kiran C. Patel Centre for Sustainable Development, named after Indian American physician Kiran C. Patel, with a goal of advancing local and global solutions through cutting-edge interdisciplinary research on water, energy and climate change. (photos provided)



Dr. Kiran C. Patel, seen here with IIT Gandhinagar director Sudhir K. Jain, is having a center named after him at IIT Gandhinagar. The center aims to be the principal resource center for sustainable development in India.

The Indian Institute of Technology in Gandhinagar Feb. 9 announced it has launched the Dr. Kiran C. Patel Centre for Sustainable Development with the hope of becoming the principal resource center for sustainable development in India.

The center, established thanks to a gift from Florida-based Indian

American cardiologist Kiran C. Patel, promises to advance local and global solutions through cutting-edge interdisciplinary research.

Inaugurated on Jan. 30, the center will develop a national and global network of leading experts and researchers on sustainability and undertake research on water, pollution, waste management, energy, natural resources and climate change.

It will research sustainability and related challenges of high societal importance and promote cost-effective and sustainable solutions through its strong outreach and technology-transfer programs, according to a news release.

The center will undertake technology transfer of sustainable solutions to NGOs, local governments and industry and collaborate with policy makers and industry to identify and solve sustainability challenges. It will also promote startups on sustainability with IITGN's Entrepreneurship Cell by providing Seed Grants, the release added.

"The single major challenge facing the next generation will be lack of clean air, natural resources and non-toxic environment," Patel said during the center's inauguration, according to the release.

"It is imperative that IITs of the world develop the intellectual capital to create a sustainable planet earth that can ensure the well-being of ten plus billion people residing in this world in the coming decades," the cardiologist added.

"Dr. Patel's exceptional generosity for an institution with which he has no earlier connection touches us deeply and inspires us greatly," IIT Gandhinagar director Sudhir K. Jain said. "The gift will enable



our faculty and students to work on developing practical solutions to major sustainability challenges through an integration of advanced research, traditional knowledge and field understanding.”

The IIT Gandhinagar campus is the first campus in India to receive the 5-star GRIHA LD rating for its ecofriendly and sustainable design. The IITGN campus is considered a “living laboratory” on sustainability, according to the news release.

The center will strive to address major sustainability challenges and translate them into prototypes, patents, and publications. It will also establish an effective technology-transfer program for sustainability solutions in the field and promote networking and collaboration among scholars, policy makers, industry, non-profit organizations and other stakeholders on sustainability, it said.

Additionally, the center will also support research on sustainability at IIT Gandhinagar, and identify, prioritize and lead sustainability related thrust areas. It will explore and promote collaboration opportunities, catalyze research proposals on sustainability on campus and develop vibrant visiting faculty and student research programs, the release added.

It will also undertake outreach and advocacy initiatives. It will coordinate training programs and workshops on sustainable development for professionals in industry, NGOs, and public officials and promote sustainable solutions in the public and private sphere, disseminate conceptual and practical knowledge, training materials and create awareness on sustainability, it said.

The center’s faculties have collaborations with colleagues at Columbia University, Purdue University, the United Nations Development Program, United Nations Environment Program, Royal Netherlands Meteorological Institute, Royal University of Bhutan and Sonnen, Germany, among many others.

The center offers summer research internships open to students nationwide on various sustainability themes every year, it said.

## **February 21**

### **JEE Advanced 2019: 2, 24,000 candidates to be shortlisted for exam – check eligibility on [jeeadv.ac.in](http://jeeadv.ac.in)**

<https://www.timesnownews.com/education/article/jee-advanced-2019-224000-candidates-to-be-shortlisted-for-exam-check-eligibility-on-jeeadv-ac-in/369726>

**JEE Advanced 2019 would be conducted on May 19, 2019. The online application forms would release on [jeeadv.ac.in](http://jeeadv.ac.in) after JEE Main 2019 final result and rank is released in April.**

Indian Institute of Technology, IIT Roorkee has released the preliminary poster for the JEE Advanced 2019 examination. As per the poster now available on the official website, 2,24,000 candidates would be shortlisted on the basis of the JEE Main 2019 Rank for the JEE Advanced or IIT JEE examination 2019. The details of the eligibility along with important dates, online application fee and basic instructions are listed below. JEE Advanced 2019 applications would begin in May first week after JEE Main 2019 Final result and rank is declared.

Please note, the number of candidates to be shortlisted is not exact and may vary. The cut off for the JEE Advanced 2019 examination would be shared at the time of declaration of JEE Main 2019 Rank. As per National Testing Agency circular, the JEE Main 2019 rank is expected to be announced by April 30, 2019. Check the [JEE Advanced 2019 Poster](#) here.

**JEE Advanced 2019 Eligibility Criteria:**

Indian citizens (including PIO and OCI candidates) have to qualify 5 criterias to be eligible for JEE Advanced 2019 examination. The same are provided below.

Should qualify JEE Main 2019 examination and be placed among the top 2,24,000 candidates (including all categories) in JEE Main 2019 Paper I.

**Age limit:** As per the poster available on the website, candidates born on or after October 1, 1994 are eligible to apply for JEE Advanced 2019. Please note, this means that the candidate should be 25 years of age or less as on October 1, 2019.

Candidates who have appeared in JEE Advanced 2017 or before are not eligible to apply.

Also, candidates who have appeared in their board examination in 2018 or would be appearing in 2019 are eligible to apply.

Candidates should not have accepted admission in IITs. Please understand, if a student was offered admission but did not accept the seat, he or she is eligible to apply. However, if a candidate had accepted the admission and then had decided to drop out, he or she is not eligible.

For Foreign candidates, only criteria 2,3,4 and 5 are eligible. Indian citizens are required to fulfill the criteria as mentioned above. Also, Supreme Court had last month ruled that the upper age limit for IIT JEE examination should be removed. Hence, the eligibility criteria as mentioned in point 2 is expected to be modified. All students are advised to go through the information bulletin as and when it is released.

**IIT-Roorkee to introduce course on stainless steel and advanced carbon special steel**

<https://indianexpress.com/article/education/iit-roorkee-to-introduce-course-on-stainless-steel-and-advanced-carbon-special-steel/>

**IIT-Roorkee has decided to institutionalise a 3 credit elective course on stainless steel and advanced carbon special steel for the 4th year B Tech and PG students of the Department of Metallurgical and Materials Engineering.**

IIT-Roorkee will start an elective course on stainless steel and advanced carbon special steel, in association with Jindal Stainless. The course will include the study of these metals in detail, including the uniqueness of various grades, behavioural and forming characteristics, determination of life cycle cost-benefit analysis, and an understanding of the entire gamut of their applications across the globe.

Director, IIT-Roorkee, Prof Ajit Kumar Chaturvedi, said, "IIT-Roorkee is pleased to enter into a long-term association with Jindal Stainless Ltd on institutionalising a course on stainless steel, whereby, various aspects of the material would be covered in depth in architecture, metallurgy, and materials engineering course curricula."

IIT-Roorkee has decided to institutionalise a 3 credit elective course on stainless steel and advanced carbon special steel for the 4th year B Tech and PG students of the Department of Metallurgical and Materials Engineering.

The duration of this course will be 3.5 months, with 3 lectures and 1 tutorial schedule per week. It is expected to commence from July 2019.

Director, Jindal Stainless, S Bhattacharya added, "Stainless steel is a young and green metal with ample potential for growth. In India, it is still at a nascent stage, with a per capita consumption of 2 kg, as compared to the global average of 6 kg. Here, it is synonymous with cookware and kitchenware, while in more developed economies, the metal is widely used in segments such as architecture-building-construction, automobile-railway-transport, and process industries, among others. By collaborating with academia, our intent is to drive awareness among the future engineers and architects of the country."

The course curricula will also feature a hands-on experience on fabrication with stainless steel in the form of plant visits for the students at various manufacturing units of Jindal Stainless in Hisar and Pathredi in Haryana.

Apart from the elective course in the Department of Metallurgical and Materials Engineering, Architecture and Planning Department of IIT-Roorkee will be introducing courses on stainless steel modules in March 2019.

They will be included in core subjects on "Modern World Architecture", focusing on the history and evolution of stainless steel, uniqueness of its different grades, and a detailed understanding of its entire gamut of applications across the globe, including architecture, building and construction.

Added to this are courses on "High Rise Buildings" and "Design Studio" focusing on the advanced technologies being adopted for construction of stainless steel megastructures, with a detailed understanding of its joinery characteristics with other materials.

## **IIT Bombay Sets a Benchmark in Innovative Use of Emerging Technologies**

<https://www.expresscomputer.in/artificial-intelligence-ai/iit-bombay-sets-a-benchmark-in-innovative-use-of-emerging-technologies/33242/>

**One of the most sought-after engineering institutes in India, IIT Bombay has been actively implementing new and emerging technologies. Express Computer delves further into the innovative use cases at the institute**

IIT Bombay (IITB), one of the most respected technology institutes in the country, provides great emphasis on research and development to emerge as a global leader in advanced technology, as

well as to reach out to the national and social needs of the country. Some of the examples of innovations and technology-enabled educational project implementations of IITB include Centre For Distance Engineering Education Programme (CDEEP), National Programme on Technology Enhanced Learning (NPTEL), Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT), Spoken Tutorial, T10KT and IITBombayX.

“IITB is one of the few premier institutes in the country with a strong inter-disciplinary Programme in Educational Technology (ET), working towards improving teaching and learning practices in education. ET is a broad field, which involves the use of technology to either support existing practices in helping people learn, or discover new ways to support learning, that weren’t possible without facilitation of technology,” informs a spokesperson of IITB.

The research goals of the department of ET at IITB are categorised into different focal areas. One of the key focal areas, named Technology-Enhanced Learning of Thinking Skills (TELoTS), focuses on building students’ thinking skills, which can be transferred across disciplines. Thinking skills, such as design skills or estimation skills, which manifest differently in various disciplines, have a common abstract nature, which is imparted through creation and implementation of interactive learning environments built for students.

“Remarkable efforts have been made by the department in training of teachers across India as a part of another focal area, named Teacher Use of Educational Technology (TUET). More than 1,77,000 teachers have been trained through workshops or MOOC initiatives on research-based teaching strategies, which have been known and established to be effective both with and without technology,” the spokesperson says.

Modern technologies such as augmented reality, virtual reality, eye tracking, GSR, etc, are being employed by ET researchers at IITB to augment learning, and to understand the complex interplay of effect, cognition and motivation in the teaching-learning process. Several emerging technology applications, grounded in established learning theories, are being developed by the group to facilitate technology-enhanced learning.

Some of these projects include ‘Speak Up’ to improve oral presentation skills for anxious speakers using virtual reality, ‘Geometry via Gestures’ to enable learners to build 3D Geometric abilities, ‘Stereochemistry via Augmented Reality’ to enable learners to spatially visualise and interact with 3D molecular models, and ‘Corrective Myo Band Badminton Trainer’ to help novice badminton learners in visualising muscular effort and swing of the arm.

“The applications of these various emerging research areas in ET are gradually addressing the contemporary challenges of school and university education. In the coming years, the multi-disciplinary nature of technology-enabled learning analytics of educational data will provide richer insights into learning behaviour, and will further influence the existing and future education models. Moving forward in educational technology, one of the common visions of ET researchers is the effective integration of technology as an integral part of a strong pedagogical model,” the spokesperson adds.

## A New Porter for Cancer Drugs

<https://researchmatters.in/news/new-porter-cancer-drugs>



**Researchers from IIT Bombay have designed a protein-based carrier for delivering drugs into cancer cells.**

An effective strategy towards treating cancer is to deliver just the right dose of the anticancer drug to kill only cancerous cells and cause minimum damage to other healthy tissues. Scientists are experimenting with various techniques to achieve targeted delivery and controlled release of anticancer drugs. In a recent study, researchers at the Indian Institute of Technology Bombay (IIT Bombay) have used a protein derived from the serum of cows--- called bovine serum albumin (BSA) ---in a saline solution, to make a hydrogel that acts as a drug carrier.

Hydrogels are jelly-like materials that are mostly liquid but exhibit solid-like properties. They are formed by a network of synthetic or natural polymers dispersed in water. When kept steady (that is, not subject to any mechanical disturbance or force), they retain their shape---as if it were solid---due to the multiple molecules cross-linked to create a solid-like structure. Hydrogels made with a naturally-occurring polymer, like a protein, are used in medicine as they are biocompatible and can be naturally removed from the body after use. They have a broad range of applications in drug delivery, tissue engineering, sensing, and making artificial organs.

*“Significant progress has already been made in the field of cancer treatment. However, several challenges still exist, and there is a dire need to develop new systems and strategies to address these challenges. Hydrogels serve as an efficient platform in this regard”, says Prof Chebrolu Pulla Rao from IIT Bombay, who led the study.*

In this study, published in the journal ACS Sustainable Chemistry & Engineering, the researchers combined BSA molecules in saline solution with the help of a cross-linking agent called epichlorohydrin. The cross-links thus formed connect different polymer chains and help build a gel-like structure. The resulting hydrogel is highly porous and can carry drugs like a capsule. The researchers also showed that one could control the size of the pores by controlling the concentration of BSA used while making the hydrogel.

Most gels become liquids when they are subject to pressure or disturbance—such as while passing through an injection needle or due to the physical stress inside the body. However, the BSA hydrogel created by the researchers retained its gel-like structure even after passing through an

injection needle—a desirable quality for therapeutic use. To be able to use the hydrogel to carry drugs, the gel needs to retain its shape or integrity once it enters the patient's body. The researchers observed that the BSA gel healed itself after mechanical damage and could withstand a weight of about 300 times its own. These properties ensured its potential as a reliable carrier of drugs.

The researchers then studied the rate at which the hydrogel released the loaded anticancer drug by measuring the amount of drug released at regular intervals. They observed that the drug release continued even after 120 hours, ensuring a slow and continuous release necessary for successful chemotherapy, as burst releases are harmful. They also tested the rate of drug release at various levels of acidity and found that it was relatively slow and continuous. It was highest at an acidity level that corresponds to that of cancer cells. “The release is sensitive to acidity, which is a boon in disguise since the pH of cancer cells are also acidic”, says Prof Rao. Besides, the BSA hydrogel is biodegradable, and a digestive enzyme called trypsin, produced in the small intestines of humans can break it down.

The researchers also tested the efficiency of the hydrogels in carrying and delivering drugs by using cancer cells cultured in the laboratory. They immersed the drug-loaded hydrogels in a culture medium for 24 hours to allow the drugs to mix with the medium and then treated the cancer cells with this medium. They found that 70-80% cancer cells died, proving that the BSA hydrogel is a potential carrier for anticancer drugs. The clear gels, which did not have any medicine, were harmless and did not kill any cells.

*The proposed BSA hydrogel is versatile and can carry drugs to treat other conditions besides cancer. “There can be various other potential applications of these gels, which are being explored. These can be loaded with other specific drugs for external applications such as wound healing or antimicrobial activities”, adds Prof Rao.*

Are these gels ready to be used? Not yet, say the researchers. “We have just completed the basic studies to explore the properties of the gel, and now plan to go ahead for in vivo (in a living organism) studies. Only when the results of the in vivo studies are positive, its commercial importance can be thought of”, says Prof Rao. Since the gel is not patented, any researcher could use it for further studies. The findings of the study bring new hopes of cancer treatments that can effectively counter the disease with minimal side-effects.

## **IIT Madras Develops System to Control Huge Crowds during Kumbh, Hajj**

<https://www.news18.com/news/india/iit-madras-develops-system-to-control-huge-crowds-during-kumbh-hajj-2043839.html>

**The research conducted by IIT Madras and published in the journal Physical Review Letters, can also help design safe evacuation procedures for events and locations that witness high footfall.**



An aerial view of the devotees gathered to take a holy dip during the second Shahi Snan at Kumbh Mela in Prayagraj. (Image: Reuters)

Scientists at IIT Madras have developed an algorithm that can help manage dense crowds using minimal manpower, and prevent deadly stampedes in huge public gatherings like the Kumbh Mela and the Hajj.

Using a computer simulation, researchers can intelligently plan where to place police personnel to quickly quell disturbances in a crowd that could otherwise lead to panic and chaos.

The research, published in the journal *Physical Review Letters*, can also help design safe evacuation procedures for events and locations that witness high footfall.

"Couple of years ago the Elphinstone bridge tragedy took place in Mumbai. It was a very unfortunate event that we thought could have been prevented by understanding the physics of stampede," said Mahesh Panchagnula, a professor at Indian Institute of Technology (IIT) Madras.

"If we know how these events start and how they propagate through a crowd, there are ways of mitigating it," he told PTI.

"These kinds of stampedes have clear patterns in how they start. We wanted to understand those early signs and figure out how you place the police people, or what we call 'gamechangers', who then direct the crowd in a way that would prevent stampede," Panchagnula said.

The ongoing Kumbh Mela, a Hindu pilgrimage at Allahabad, is one of the world's largest religious gatherings. Up to two crore people taking a dip in the river on some days, making the event a hot spot for mishaps that could put thousands at risk.

In 2013, at least 42 people died after a stampede broke out at the train station in Allahabad during the festival.

Similarly, Mecca in Saudi Arabia, Islam's holiest city, is visited by millions of pilgrims every year. In 2015, a stampede caused deaths of over 2,000 pilgrims during the annual pilgrimage -- the deadliest Hajj disaster in history.

Such events call for better methods of crowd control. The physics community has been looking at this problem for a while now, researchers said.

"For example they have investigated the idea of placing barriers at certain places that would make the flow of crowd easier. It may sound counter intuitive, but it works," he said.

"It is all about streamlining the crowd. It looks like you have placed barricades at certain places, but it helps easing the crowd flow," he added.

The research team, which includes Sumesh P Thampi and Ajinkya Kulkarni, analysed what happens when a dense crowd -- about 3-4 people per square metres -- fills into a confined space.

They said that in such gatherings the movement of the crowd resembles that of any fluid, and hence laws of fluid dynamics can be applied to predict where disturbances can arise.

"If we look at the areal videos of people circumnavigating the Kaaba in Mecca, it looks exactly like water swirling in a bucket," Panchagnula said.

The researchers tried to capture the simple rules that a person follows to navigate in a crowd in to a mathematical model. The predictions of the model adhered well to experimental observations, they said.

"Let's say a gathering is set to take place in Marina beach. The police will set up barricades to control the crowd. All we need is a drawing of where the barricades are being placed, and what is the size of the expected crowd," Panchagnula said.

"The simulation can predict at which points a stampede is likely to start, and the optimal points where police personnel should be deployed to quickly prevent a stampede," he said.

This would allow the police to design the best strategy for crowd control, with the minimum personnel. The model can also help design a better barricade system, researchers said.

Apart from helping the police personnel place themselves at strategic locations even before an event begins, the algorithm can be incorporated in future drones that can monitor crowds in real time.

"We are getting into an age where we will see more use of drones to monitor crowd motions in these large gatherings. With our model, real time feedback from such drones would be very useful," Panchagnula said.



The researchers are keen to partner with government agencies to develop intelligent crowd management strategies for future religious, political or sporting events.

The cost of implementing the predictive model in a real life scenario is very minimal, say scientists, as it simply informs authorities on how to best use their existing resources.

### **NIT Warangal prof made as IIIT director**

<https://www.deccanchronicle.com/nation/current-affairs/210219/nit-warangal-prof-made-as-iiit-director.html>

Mr Somayajulu completed his M. Tech from IIT Kharagpur and PhD from IIT Delhi.



Professor D.V.L.N. Somayajulu, professor of Computer Science and Engineering and Chair professor of Electronic and ICT academy, was appointed as Director of Indian institute of information technology (IIIT) Kurnool.

The MHRD has issued orders on his appointment on Wednesday.

Mr Somayajulu completed his M. Tech from IIT Kharagpur and PhD from IIT Delhi.

He has been serving in this institute since 1988. NIT Warangal director N.V. Ramana Rao and staff members congratulated him.

### **February 20**

### **PM Modi Inaugurates Supercomputer 'Param Shivay' At IIT-BHU**

<http://bweducation.businessworld.in/article/PM-Modi-Inaugurates-Supercomputer-Param-Shivay-At-IIT-BHU/20-02-2019-167355/>

The IIT-BHU got 'Param Shivay' Supercomputer of 833 teraflop capacity built at the cost of Rs 32.5 crore.



Prime Minister Narendra Modi today inaugurated 'Param Shivay' Supercomputer of 833 teraflop capacity built at the cost of Rs 32.5 crore under the National Super Computing Mission at the Indian Institute of Technology (IIT), Banaras Hindu University (BHU). A postal stamp and postal stamp album were also released by the PM on the centenary year of the institute.

Scientists, teachers and research students, government research laboratories in adjacent engineering colleges to IIT-BHU can avail benefits of the projects. About 40 per cent computer power will be used by the students of Navodaya Vidyalaya.

The problems of common man related to relevant social issues such as irrigation schemes, traffic management, health, an affordable drug will also be taken care of with this supercomputer centre, claims the institute.

The 'Param Shivay' will include 1 peta byte secondary storage and appropriate open source system and application software suite using 223 processor nodes, 384 GB per node DDR4 RAM, parallel file system, including CPU and GPU.

India's first supercomputer called PARAM 8000 was launched in 1991.

At present, Indian Institute of Tropical Meteorology has Pratyush, National Centre for Medium-Range Weather Forecasting has Mihir and IISc has SERC-Cray as supercomputers in India.

## **JAM 2019: IIT खड़गपुर ने जारी की रिस्पॉन्स शीट, ये देखें जानकारी**

<https://www.amarujala.com/education/sarkari-result-jam-2019-iit-kharagpur-out-response-sheets-know-more-details>



इंडियन इंस्टीट्यूट ऑफ क्यारगपुर ने 20 फरवरी, 2019 को JAM 2019 रिस्पॉन्स शीट जारी की है। रिस्पॉन्स शीट में उनके JAM 2019 के पेपर में परीक्षार्थियों द्वारा दिए गए उत्तरों का उल्लेख है। JAM 2019 का आयोजन 10 फरवरी को ऑनलाइन मोड में किया गया था। इससे पहले प्रतिक्रिया पत्रक 19 फरवरी, 2019 को जारी किए जाने थे, जिसे हालांकि एक दिन की देरी हो गई है।

- उम्मीदवारों को ध्यान देना चाहिए कि सही उत्तर का उल्लेख करने वाले प्रवेश परीक्षा की उत्तर कुंजी 25 फरवरी, 2019 को ऑनलाइन जारी की जाएगी।

- JAM 2019 के परिणाम 20 मार्च को जारी किए जाएंगे, जिसके बाद काउंसलिंग प्रक्रिया के लिए प्रवेश फॉर्म घोषित किए जाएंगे।

- प्रवेश उम्मीदवारों द्वारा प्राप्त अंकों और प्रत्येक विषय के लिए निर्धारित कटऑफ के आधार पर आयोजित किया जाएगा।

- JAM 2019 को उत्तीर्ण करने वाले उम्मीदवारों को प्रवेश पत्र भरना और जमा करना होगा जिसके बाद IIT खड़गपुर तीन प्रवेश सूची जारी करेगा जिसके आधार पर चयनित उम्मीदवारों को सीटें आवंटित की जाएंगी।

## **IIT Kharagpur to Launch a Full Scholarship Programme for SAARC Nationals**

<https://www.jagranjosh.com/news/iit-kharagpur-to-launch-a-full-scholarship-program-for-saarc-nationals-148086>

The Indian Institute of Technology, Kharagpur will be launching a full scholarship program for the SAARC nationals. As per the official notification released by the institute, the first batch will be open to 10 full-time students in the different courses offered at undergraduate, postgraduate and doctoral levels. IIT Kharagpur will be reaching out to the different universities and embassies of SAARC countries through the Ministry of External Affairs. The institute will be opening up for enrolment this month for the 2019-20 academic session for both the summer and winter terms. IIT KGP is focusing on students from Bangladesh, Nepal, Sri Lanka and Maldives.

The first batch of 10 students will commence with the funding from US based alumnus and petrochemical industrialist Dr Asoke Dey Sarkar. The first edition of the scholarship programme will cover the student's expenses related to airfare, tuition fee, living expenses, local transport as well as medical insurance. Prof Baidurya Bhattacharya, Dean, International Relations at IIT KGP said that, ' "SAARC nations share a common heritage. We also share a common future and a common vision of prosperity. There are some excellent educational institutions in our neighbouring countries with students who are comparable to the best in the world ...", The courses offered will comprise a wide range of field such as engineering and technology, biosciences, social sciences, economics, management, law and others.

The students will be required to explore the courses and research areas and identify the experts at IIT KGP as mentors. In addition to the formal application, the students will be required to appear for a video interview. If selected they will also have the opportunity to work on research projects including collaborative research with international partners of IIT Kharagpur which will include areas such as artificial intelligence, robotics, climate change, high-speed and intelligent transportation, affordable healthcare, clean energy, etc.

### **February 19**

### **IIT Bombay gets a new director – all you need to know about Prof. Subhasis Chaudhuri**

<https://www.timesnownews.com/education/article/iit-bombay-gets-a-new-director-all-you-need-to-know-about-prof-subhasis-chaudhuri/368452>

**IIT Bombay has appointed Professor Subhasis Chaudhuri as the new Director. All you need to know.**



Subhasis Chaudhuri, Director, IIT Bombay Image Credit: iitb.ac.in

Indian Institute of Technology, IIT Bombay is all set to get a new director. Professor Subhasis Chaudhuri would take charge from April 15, 2019 after the end of the present director, Prof. Devang Khakhar. Prof. Chaudhuri is presently head of the electrical engineering department, apart from

holding other administrative posts and is an Artificial Intelligence Researcher. IIT Bombay is at present the leading engineering institute from the country in various international university ranking systems.

Subhasis Chaudhuri has done his graduation from IIT Kharagpur and his masters from University of Calgary, Canada. After completing his Ph.D from University of California he returned to India and started his career as an Assistant Professor at IIT Bombay.

He has been appointed for a tenure of 5 years. Among the other positions he has held at IIT Bombay, he has been the Deputy Director (academic and infrastructural affairs), Dean (international relations), Head of the electrical engineering department. At present he chairs the Kamalnayan Bajaj in the department. He is also in-charge of the IIT Bombay Monash Academy.

Professor Chaudhuri has many awards and recognitions to his name. He was awarded Shanti Swarup Bhatnagar Prize for excellence in research. His research work is primarily in image processing, computer vision, machine learning and computational haptics .

Talking about his vision for IIT Bombay, Professor Chaudhuri in an interview to TOI said, "We have already shown that we can do good research and teaching and now we have to take it to the next level. Now, we have to show the world that we are at par with some of the best institutes globally. My key focus will be on improving our research output further, to have more social engagements to help the country benefit in socially relevant problems. We will also try to connect better with the industries and to help graduates set up new ventures."

## **February 18**

### **Winners of Maths Olympiad felicitated at IIT Roorkee**

<https://www.dailypioneer.com/2019/state-editions/winners-of-maths-olympiad-felicitated-at-iit-roorkee.html>

Initiated by women scientists of Indian Institute of Technology (IIT) Mumbai in 1979 and carried forward by the women scientists of IIT Roorkee for the past three years, this tradition of talent hunt in Mathematics is being carried forwards towards its aim.

On Sunday, IIT Roorkee campus was abuzz with student winners from classes VI to IX who had participated in Vijaya Agarwal Memorial Mathematics Olympiad (VAMMO-3) on January 27, 2019 in the memory of Professor Vijaya Agarwal, one of the founder members of Indian Women Scientist Association, Roorkee chapter.

About 1400 students from 16 schools of Roorkee and nine schools of Haridwar had participated and 35 students were felicitated in the award function.

A total of 35 cash prizes and certificates with trophies were awarded. Four students secured first position and were given Rs 3,000 each, four students were awarded second prize of Rs 2,000 each and third prize was for Rs 1,000, awarded to each of the eight students along with 19 consolation prizes. More than 70 certificates of encouragements were awarded.

Presiding over the award function as chief guest Sonia Garg, the director of Forace Industries, Haridwar appreciated the efforts made by the competition organisers and said that such type of events boosts the confidence of children. "With an endeavour to promote analytical and problem solving skills among the students, IWSA has taken up a commendable initiative of organising Mathematics Olympiad.

The event was a big success which is evident from the huge participation of more than 25 schools of Haridwar and Roorkee," she said. She congratulated IWSA for their perseverance and dedication towards the cause of uplifting scientific temperament in the society through various projects and events.

The award ceremony Guest of Honour Sadhana Sachdeva , Member of Chinmaya Education Society, Haridwar and RC Agarwal congratulated all the awardees and wished them the best for a good future and success in all the endeavours.

The maths olympiad coordinator from Haridwar Manika Saraswat said, "This year our aim as a team was to bring VAMMO-3 as intercity Olympiad and we succeeded with huge number of participation.

The encouragement awards for students of each class were included this year along with the appreciation to all school coordinators. The question paper was also made in Hindi to encourage Hindi medium schools."

IWSA president Indu Mehrotra and secretary Neeta Mittal said that workshop for children in applied sciences was also cards for the schools of Haridwar in near future. Abhishek Khandelwal of class IX of Adarsh Bal Niketan, Parth of class VIII from Montfort school, Jinesh Kumar Mahapatra of class VII from DPS Roorkee and Vaibhav Naragwani from class VI of Hariharanand Public school Haridwar bagged first positions.

## **February 17**

### **IIT Madras Incubation Cell hosts the first Edition of 'Chennai Demo Day' featuring over 100 startups**

<https://indiaeducationdiary.in/iit-madras-incubation-cell-hosts-first-edition-chennai-demo-day-featuring-100-startups/>

Indian Institute of Technology Madras Incubation Cell and TIE-Chennai organized the first edition of 'Chennai Demo Day' to showcase India's leading Deep Tech Innovation and Startup Hub to Investors, Industries, Startup community and the Government.

Over 100 technology startups from the IITM Incubation Cell, the IITM Centres of Excellence and the Pre-Incubators showcased their technology during this event, held today (16th February 2019) at the IIT Madras Research Park. The event was intended to provide a platform for Startups incubated by IIT Madras as well as startups in Chennai to interact with investors, industry, Government and institutions from across India.

Speaking about their experience in taking part in this event, Mr. Pankaj Pawan, Founder and CEO, Maximl, an enterprise SAAS startup, disrupting industrial collaboration by rapidly digitalizing last

mile workflows, said, “Events like ‘Chennai Demo Day’ help us connect with industry personnel which provides two things – Their first-hand experience about the problem, which helps us shape our product development roadmap and business opportunities to commercialize and scale our product.”

Mr. Prasanth Parameswaran, Senior Product Manager, Uniphore, said, “Uniphore is committed to building the future of Conversational Voice Interfaces with state of the art AI Tech. The event was a great opportunity for us to meet fellow tech product companies to understand and share thoughts on challenges in building and scaling world class products out of India” –The outcomes of this event for startups include investment leads, industry connections, potential hires through various educational institutions, and showcasing the transnational research work underway IIT Madras and Incubation Cell that are supporting futuristic ventures creating social impacts.

Mr. Tanuj Jhunjunwala, Cofounder and CEO, Planys Technologies, said “Planys Technologies is a pioneer in underwater robotics inspection solutions in India. An IIT Madras incubated startup inspired by the ‘Make-in-India’ initiative, Planys develops indigenous custom built remotely operated Vehicles (ROVs) for inspection of underwater structures.”

Delivering the keynote address, Prof. Ashok Jhunjunwala, Co-Chairman, IITMIC and IITMRP, said, “The IIT Madras Research Park is a non-profit company, started by IIT Madras but independent of IIT Madras and its objective is to enable innovation and interaction between academia and industry, which is the key. The Research Park represents a symbol in the country of maturing of the interaction between industry and academia. Innovation happens when three sets of people come together – experienced industry person, a knowledgeable faculty and youngsters who do not know that it cannot be done.”

Further, Prof. Ashok Jhunjunwala added, “This facility now has around 80 companies who have set up their R&D units here and are collaborating with IIT Madras faculty. Today we have more than 50 faculty members who have set up their own startups through the IIT Madras Incubation Cell. We will incubate 60 to 70 companies every year and will soon touch 100 companies every year.”

Entrepreneurship Development Institute of India (EDII) is also taking part and is showcasing the recently-launched Tamil Nadu Government’s Startup Policy. Participants were also taken around the IIT Madras Research Park, which is the largest university-based Research Park in India.

Speaking later, Mr. V. Shankar, President, TiE-Chennai & Director, IITMIC Board, said, “We want more startups from Chennai to participate in this event so that it becomes a truly ‘Chennai Demo Day’ in the future.”

The startups that participated in the event spanned various sectors including, manufacturing, automobiles, electric vehicles, robotics, Internet of Things, Agritech, Solar-DC, HealthTech, Biotechnology, AI/ML/AR-VR/Data Sciences, Edtech, Water, Waste and Consumer Tech.

Highlighting the importance of this event, Dr Tamaswati Ghosh, Chief Executive Officer, IITM Incubation Cell, said, “The demo day is a first-of-its-kind event at IITMRP held in such a grand scale, where we are witnessing participation from 100+ deep tech startups (incubated at IITM or from across Chennai) working to solve challenges faced by our country today. We are deeply encouraged

by the overwhelming support by our partner investors (80+ from pan India) and industry (60+) that are attending today.”

Senior executives from various Corporate firms including the Murugappa Group, ITC, Google ventures, Sequoia Capital, Ivy cap ventures and Dow Chemicals besides Government agencies such as Defence Research and Development Organization (DRDO), Oil and Natural Gas Corporation Limited (ONGC) participated in the event.

## **February 16**

### **EU-India to jointly fund 7 research and innovation projects to tackle water challenges**

[https://www.business-standard.com/article/pti-stories/eu-india-to-jointly-fund-7-research-and-innovation-projects-to-tackle-water-challenges-119021400590\\_1.html](https://www.business-standard.com/article/pti-stories/eu-india-to-jointly-fund-7-research-and-innovation-projects-to-tackle-water-challenges-119021400590_1.html)

India and the European Union on Thursday decided to jointly invest up to 40 million euros on seven research and innovation projects, including on Ganga rejuvenation, to tackle the urgent water challenges in the country.

The Delegation of the European Union to India and the Indian government's science and technology, and biotechnology departments on Thursday announced the seven projects that have been selected under the EU-India Joint Call on Research and Innovation for Water.

The selected projects will develop new or adapt the most suitable existing innovative and affordable solutions for Indian conditions, both in urban and rural areas, thus providing some key solutions to the urgent water challenges, an EU statement said.

The EU, through its research and innovation programme 'Horizon 2020', and the Indian government will invest a total of up to EUR 40 million (Rs 323 crore) on seven projects, which have an average duration of four years.

The key focus areas of these projects include improving the quality of drinking water, waste water management and real-time monitoring and control systems.

In total, 130 entities will be part of these seven projects, ranging from universities, research labs, private sector and municipalities.

Those participating in the projects will include prestigious institutions such as IIT-Bombay, IIT-Guwahati, IIT-Bhubaneswar, IIT-Roorkee, IIT-Delhi, CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) and TERI.

Besides supporting India's Ganga Rejuvenation initiative, the projects will also support transfer of European technologies to India, which would require them to be tested, demonstrated, and customised to suit Indian needs at an affordable cost, the statement said.

The cooperation will also lead to increased scientific excellence while ensuring that at the end of the project, the technology can be deployed and be of benefit to the entire Indian population, it said.



"Many of these water challenges are common to India and the EU. India and Europe have, in the past, collaborated intensively on water, enriching each other's technological and scientific knowledge and management capacities to cope with stress on water resources," said Tomasz Kozlowski, Ambassador of the European Union to India.

"The selected research and innovation projects aim at further addressing these key water issues together with India and in doing so, will contribute to the Sustainable Development Goals to which both Europe and India are committed," he said.

India-H2O -- bio-mimetic and phyto-technologies designed for low-cost purification and recycling of water, LOTUS -- low-cost innovative technology for water quality monitoring and water resources management for urban and rural water systems in India, and PANI WATER -- Photo-irradiation and adsorption based novel innovations for water-treatment, are among the projects selected.

PAVITR-- potential and validation of sustainable natural and advance technologies for water and waste water treatment, monitoring and safe water reuse in India, and PAVITRA GANGA -- unlocking waste water treatment, water re-use and resource recovery opportunities for urban and peri-urban areas in India are among the seven projects.

The other two projects are SAEASWATI 2.0 -- Identifying best available technologies for decentralized wastewater treatment and resource recovery for India, and SPRING -- Strategic planning for water resources and implementation of novel biotechnical treatment solutions and good practices.

### **IIT Kharagpur students win the Honda Young Engineer and Scientist's (Y-E-S) Award for 2018-19**

<https://www.indiatoday.in/education-today/news/story/iit-kharagpur-students-win-the-honda-young-engineer-and-scientist-s-y-e-s-award-for-2018-19-1457602-2019-02-16>

*The students for Honda Young Engineer and Scientist's (Y-E-S) Award for 2018-19 were evaluated on the basis of their essay.*



From L-R Lakshmi Vasanta Majety (3rd year, Chemical Engineering), Sabyasachi Sen (3rd year, Mechanical Engineering), and Nirmalya Panigrahi (3rd year, Mechanical Engineering).

Three students from IIT Kharagpur have won the Honda Young Engineer and Scientist's (Y-E-S) Award for 2018-19. **Lakshmi Vasanta Majety** (3rd year, Chemical Engineering), **Nirmalya Panigrahi** (3rd year, Mechanical Engineering) and **Sabyasachi Sen** (3rd year, Mechanical Engineering) have been awarded by the Honda Foundation for their academic brilliance in the area of science and technology and promise of leading society towards an eco-technological orientation.

### **Highlights of the event**

In addition to promoting dissemination of eco technology among the young generations the Honda - E-S Award focuses on strengthening interaction and exchange between Japanese youths and young people expect to lead science, technology and industry in their respective countries.

Sabyasachi Sen, who has done an internship with Rakuten Inc, Tokyo, in 2017, wishes to pursue studies in the broad field of transport phenomena in his second stint at Japan for the summer of 2020.

"This award is a big boost to my confidence and gives a positive thrust to my career prospects. I am eagerly looking forward to availing the Y-E-S plus award for pursuing a summer internship in Japan," said Vasanta who is not only among the budding technologist but also leading a group of about 25 students working for the Office of Alumni Affairs at IIT Kharagpur.

### **Haffkine Institute, IIT to start biomedical incubation centre**

<https://www.thehindu.com/news/cities/mumbai/haffkine-institute-iit-to-start-biomedical-incubation-centre/article26274094.ece>

### **Centre will help create user-friendly solution to problems of diagnosis, reduce costs**

The Haffkine Institute of Training, Research & Testing, Parel has partnered with IIT Bombay to establish a Biomedical Engineering & Technology incubation Centre (BETiC), which will reduce healthcare costs.

The Memorandum of Understanding for establishing BETiC at the Haffkine campus was exchanged on Monday at Sahyadri Guest House, Mumbai in the presence of Maharashtra Chief Minister, Devendra Fadnavis and Minister of Medical Education, Girish Mahajan.

Citing the benefits of setting up BETiC, Dr. Nishigandha Naik, Director, Haffkine Institute, said CT scan probes are still imported and that they could now be made in India at a cheaper cost. Similarly, Dr. Naik said Genexpert, a molecular test to detect tuberculosis bacteria, is still expensive. "The proposed centre will help create user-friendly solutions to such problems and reduce costs. Haffkine Institute will also be providing the laboratory facility for research purposes," she said.

Explaining the reason to choose Parel for such a facility, Dr. Naik said, "The presence of leading hospitals in Parel, including Tata Memorial Hospital, King Edward Memorial Hospital and Bai Jerbai Wadia Hospital for Children will enable better identification of unmet clinical needs as well as quicker feedback on devices during their development. An interdisciplinary team of doctors and engineers will develop innovative medical devices suitable for the local population, in the proposed centre."

A meeting was held at Haffkine Institute on Wednesday, attended by around 40 clinicians from local hospitals. Professor B. Ravi from IIT-Bombay, sharing information about the meeting said, “There was a one-to-one talk with the stakeholders for suggestions about issues that needed utmost attention.” The clinicians were also invited to MEDHA, a Medical Device Hackathon, planned to be tentatively held at IIT-B in March.

“MEDHA will bring doctors and engineers on one platform. It will give a platform to students to create solutions, encourage them and help them with funding. It will help bring problems and problem-solvers too on one platform,” Prof. Ravi said.